ADEQ
Arizona Department
of Environmental Quality

2013
Air Quality Division

ANNUAL AIR EMISSIONS INVENTORY QUESTIONNAIRE

Concrete Batch Plant

The 2013 Concrete Batch Plant Annual Emissions Inventory Questionnaire includes 4 forms that are required to be completed and submitted to the Air Quality Division. Instructions for each form are included below. Upon completion, submit all forms along with the signature by the Responsible Official of the facility within 90 days of receipt of a letter from the Department to the address below.

FORM 1: Facility General Information

Complete all information as requested.

FORM 2: Equipment, Stack & Location Data

Equipment Data: List all the on-site equipment along with the Authorization To Operate (ATO) number where available. Indicate, if not available.

Stack Data: Provide details of each stack.

Location Data: If the portable equiment was moved from one location to another, list the dates, the cities & counties, the latitude & longitude or address/driving directions for the portable equipment that was operated during the year 2013.

FORM 3A : Emissions Data - Point & Fugitive Emissions

Enter the number of units, throughput rate (tons/hour) for the equipment operated, and the hours operated for the year 2013. Input the number of the storage piles that were stored and processed. If the number of the hours stored is unknown, use 8760 hours to obtain a worst-case estimate. Enter the vehicle miles traveled for the haul roads (miles/year).
All the formulas are set to complete the calculations as the data is unputted. Therefore, do not move or change any of the fields or columns. If moved it will result incorrect calculations.

FORM 3B: Emissions Data - Water Heater & Generator Emissions

Based on the type of fuel used (Gasoline, Diesel, or Natural Gas/Liquid Propane), choose the appropriate table to input the equipment heat input rate (MM Btu/hour) for the water heater and hours operated for the year. Based on the type of fuel used choose the appropriate table to input the generator horsepower and hours operated. If you used commercial electricity to power your equipment covered under your permit, please check the box at the bottom of page 8.

FORM 4: Summary & Certification

A summarization of all the emissions by each pollutant will be listed within this form. All reports submitted to the Department should be certified true and accurate by the Responsible Official of the facility. This person is the owner or operator of the facility. **If there is a change of the Responsible Official of the facility, please notify the Department with an additional letter stating the change.**

If you have any question or have difficulty completing this form, please contact Michael Burton at burton.michael@azdeq.gov or (602) 771-4562. Remember to make photocopies of the completed questionnaire prior to mailing for your records/reference. Please mail the emission inventory questionnaire form to the following address:

Arizona Department of Environmental Quality
Attention: Michael Burton
Air Quality Division, SIP Section
1110 West Washington Street
Phoenix, AZ 85007

CTS#

FORM 1: FACILITY GENERAL INFORMATION YEAR 2013

SECTION I: ***Plant Identification & Mailing Information***

Company Name: _____

Place Name: _____ Place ID # : _____

Mailing Address: _____ City: _____ State: _____

County: _____ Zip Code: _____

Phone: _____ Fax: _____

Permit # or LTF #: _____ General Permit: Yes ☐ No ☐

SECTION II: ***Emissions Inventory Contact***

Name: _____ Title: _____

Phone: _____ Fax: _____

E-mail Address: _____

SECTION III: ***Confidential Request***

Pursuant to Arizona Revised Statues §49-432 and §49-201, do you claim the Emissions Inventory data submittal confidential. Yes ☐ No ☐

If yes include which portions of the inventory are confidential along with a brief explanation:

_____

_____

_____

_____

_____

FORM 2: EQUIPMENT, STACK & LOCATION DATA YEAR 2013

Table 1: Equipment List

Equipment Type	Equipment ID	ATO #	Max. Rated Capacity	Amount Processed	Hours Operated

Table 2: Stack Information

	Stack #1	Stack #2	Stack #3
Process Type/Description			
Height (feet)			
Diameter (feet)			
Velocity (feet/second)			
Exhaust Gas Temperature (F)			
Flow Rate (actual cubic feet per minute)			

Table 3: Operation Location

Date		City & County of Operation	Latitude	Longitude	Address or Driving Directions
From	To				

FORM 3A: EMISSIONS DATA - POINT — YEAR 2013

Transfer Point Emissions *Conversion Factors - 1 cubic yard of concrete = 2 tons of concrete 2000 lbs = 1 ton*

Source	Pollutant	Number of Units	Throughput Rate tons/hour	Hours Operated hours/year	Emission Factor pounds/ton	Emissions tons/year
Continuous & batch drop operations onto aggregate storage piles	PM10				0.0016	
	PM				0.0032	
Continuous & batch drop operations onto sand storage piles	PM10				0.0004	
	PM				0.0008	
Aggregate transfer to feed hopper	PM10				0.0016	
	PM				0.0032	
Sand transfer to feed hopper	PM10				0.0004	
	PM				0.0008	
Aggregate transfer to elevated bins	PM10				0.0016	
	PM				0.0032	
Sand transfer to elevated bins	PM10				0.0004	
	PM				0.0008	
Aggregate transfer to weigh hoppers	PM10				0.0019	
	PM				0.0039	
Sand transfer to weigh hoppers	PM10				0.0019	
	PM				0.0039	
Cement transfer to silo	PM10				0.0002	
	PM				0.0003	
Cement transfer to weigh hopper	PM10				0.0019	
	PM				0.0039	
Mixer loading (truck mix)	PM10				0.0022	
	PM				0.0079	
Mixer loading (central mix)	PM10				0.0007	
	PM				0.0024	
Conveyor transfer points (aggregate)	PM10				0.0004	
	PM				0.0008	
Conveyor transfer points (sand)	PM10				0.0004	
	PM				0.0008	
Screening	PM10				0.00035	
	PM				0.00103	
Fine screening	PM10				0.001	
	PM				0.0017	

FORM 3A: EMISSIONS DATA - FUGITIVES YEAR 2013

Storage Piles

Source	Pollutants	No. of Piles	Hours Stored hours/year	Emission Factor pounds/hour/pile	Emissions tons/year
Wind erosion - active aggregate storage pile	PM10			0.00001	
	PM			0.0001	
Wind erosion - active sand storage pile	PM10			0.0001	
	PM			0.0001	
Wind erosion - inactive aggregate storage pile	PM10			0.0001	
	PM			0.0001	
Wind erosion - inactive sand storage pile	PM10			0.0001	
	PM			0.0001	

Haul Roads - Vehicle Traffic Conversion Factor - 1 foot = 0.0001894 mile

Source	Pollutants	Vehicle Miles Traveled miles/year	Emission Factor pounds/VMT	Emissions tons/year
Front End Loaders	PM10		0.19	0.0000
	PM		0.73	0.0000
Ready Mix Trucks	PM10		0.17	0.0000
	PM		0.66	0.0000

FORM 3B: EMISSIONS CALCULATIONS FOR WATER HEATER YEAR 2013

Conversion Factors - MM = 1,000,000 M = 1,000 1 Therm = 100,000 BTUs. 1 MMBTU = 1,000,000 BTUs. 1HP = 2546.15 BTUs

	FUEL - NATURAL GAS		***FUEL - DIESEL***		***FUEL - BUTANE***		***FUEL - PROPANE***	
	Water Heater		**Water Heater**		**Water Heater**		**Water Heater**	
	Max. Rated Capacity MMBtu-hour	Operational Hours hours/year	Max. Rated Capacity MMBtu-hr	Operational Hours hours/year	Max. Rated Capacity MMBtu-hour	Operational Hours hours/year	Max. Rated Capacity MMBtu-hr	Operational Hours hours/year
Pollutants	Emission Factor pounds/MMBtu	Emissions tons/year	Emission Factor pounds/MMBtu	Emissions tons/year	Emission Factor pounds/MMBtu	Emissions tons/year	Emission Factor pounds/MMBtu	Emissions tons/year
PM	0.0075		0.0240		0.0059		0.0066	
PM10	0.0075		1.56E-06		0.0059		0.0066	
NOx	0.0980		0.1460		0.2059		0.2077	
SOx	0.0006		0.8290		-	-	-	-
VOC	0.0054		0.0025		0.0041		0.0033	
CO	0.0824		0.0365		0.0353		0.0350	
Acenaphthene	1.76E-09		1.54E-07		-	-	-	-
Acenaphthylene	1.76E-09		1.85E-09		-	-	-	-
Anthracene	2.35E-09		8.91E-09		-	-	-	-
Arsenic	1.96E-07		-		-	-	-	-
Benz(a)anthracene	1.76E-09		2.93E-08		-	-	-	-
Benzene	2.06E-06		1.56E-06		-	-	-	-
Benzo(b)fluoranthene	1.76E-09		-		-	-	-	-
Benzo(b,k)fluoranthene	-		1.08E-08		-	-	-	-
Benzo(g,h,i)perylene	1.18E-09		1.65E-08		-	-	-	-
Benzo(k)fluoranthene	1.76E-09		-		-	-	-	-
Beryllium	1.18E-08		-		-	-	-	-
Butane	2.06E-03		-		-	-	-	-
Cadmium	1.08E-06		-		-	-	-	-
Chromium	1.37E-06		-		-	-	-	-
Chrysene	1.76E-09		-		-	-	-	-
Dibenzo(a,h)anthracene	1.18E-09		1.22E-08		-	-	-	-
Dichlorobenzene	1.18E-06		-		-	-	-	-
Ethane	3.04E-03		-		-	-	-	-
Ethylbenzene	-		4.64E-07		-	-	-	-
Fluoranthene	2.94E-09		3.53E-08		-	-	-	-
Fluorene	2.75E-09		3.26E-08		-	-	-	-
Formaldehyde	7.35E-05		2.41E-04		-	-	-	-
Hexane	1.76E-03		-		-	-	-	-
Indeno(1,2,3-cd)pyrene	1.76E-09		1.56E-08		-	-	-	-
Lead	4.90E-07		-		-	-	-	-
2-Methylnaphthalene	2.35E-08		-		-	-	-	-
Manganese	3.73E-07		-		-	-	-	-
Mercury	2.55E-07		-		-	-	-	-
Methane	2.25E-03		1.58E-03		0.0020	0.00E+00	0.0022	0.00E+00
Molybdenum	1.08E-06		-		-	-	-	-
Naphthalene	5.98E-07		8.25E-06		-	-	-	-
OCDD	-		2.26E-11		-	-	-	-
O-Xylene	-		7.96E-07		-	-	-	-
Selenium	2.35E-08		-		-	-	-	-
1,1,1-Trichloroethane	-		1.72E-06		-	-	-	-
Toluene	3.33E-06		4.53E-05		-	-	-	-

FORM 3B: EMISSIONS CALCULATIONS - GENERATORS YEAR 2013

	FUEL - DIESEL - LESS THAN OR EQUAL TO 600 HP				***FUEL - DIESEL - GREATER THAN 600 HP***			
	Generator #1		**Generator #2**		**Generator #1**		**Generator #2**	
	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)
Pollutants	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year
PM	0.0022		0.0022		0.0007		0.0007	
PM10	0.0022		0.0022		0.0006		0.0006	
NOx	0.0310		0.0310		0.0240		0.0240	
SOx	0.0021		0.0021		0.0073		0.0073	
VOC	0.0025		0.0025		0.0007		0.0007	
CO	0.0067		0.0067		0.0055		0.0055	
Acenaphthene	9.94E-09		9.94E-09		3.28E-08		3.28E-08	
Acenaphthylene	3.54E-08		3.54E-08		6.46E-08		6.46E-08	
Acetaldehyde	5.37E-06		5.37E-06		1.76E-07		1.76E-07	
Acrolein	6.48E-07		6.48E-07		5.52E-08		5.52E-08	
Anthracene	1.31E-08		1.31E-08		8.61E-09		8.61E-09	
Benzene	6.53E-06		6.53E-06		5.43E-06		5.43E-06	
Benzo(a)anthracene	1.18E-08		1.18E-08		4.35E-09		4.35E-09	
Benzo(a)pyrene	1.32E-09		1.32E-09		1.80E-09		1.80E-09	
Benzo(b)fluoranthene	6.94E-10		6.94E-10		7.77E-09		7.77E-09	
Benzo(g,h,l)perylene	3.42E-09		3.42E-09		3.89E-09		3.89E-09	
Benzo(k)fluoranthene	1.09E-09		1.09E-09		1.53E-09		1.53E-09	
1,3-Butadiene	2.74E-07		2.74E-07		-		-	
Chrysene	2.47E-09		2.47E-09		1.07E-08		1.07E-08	
Dibenz(a,h)anthracene	4.08E-09		4.08E-09		2.42E-09		2.42E-09	
Fluoranthene	5.33E-08		5.33E-08		2.82E-08		2.82E-08	
Fluorene	2.04E-07		2.04E-07		8.96E-08		8.96E-08	
Formaldehyde	8.26E-06		8.26E-06		5.52E-07		5.52E-07	
Indeno(1,2,3-cd)pyrene	2.63E-09		2.63E-09		2.90E-09		2.90E-09	
Naphthalene	5.94E-07		5.94E-07		9.10E-07		9.10E-07	
Phenanthrene	2.06E-07		2.06E-07		2.86E-07		2.86E-07	
Propylene	1.81E-05		1.81E-05		1.95E-05		1.95E-05	
Pyrene	3.35E-08		3.35E-08		2.60E-08		2.60E-08	
Toluene	2.86E-06		2.86E-06		1.97E-06		1.97E-06	
Xylene	2.00E-06		2.00E-06		1.35E-06		1.35E-06	

☐ Check Box, if you used commercial electricity to power your permitted equipment.

FORM 3B: EMISSIONS CALCULATIONS - GENERATORS YEAR 2013

	FUEL - GASOLINE				*FUEL - NATURAL GAS OR LIQUIFIED PETROLEUM GAS*			
	Generator #1		**Generator #2**		**Generator #1**		**Generator #2**	
	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)	Max. Capacity (HP)	Operational Hours (hours/year)
Pollutants	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year	Emission Factor pounds/hp-hour	Emissions tons/year
PM	0.0007		0.0007		0.0001		0.0001	
PM10	0.0007		0.0007		0.0001		0.0001	
NOx	0.0110		0.0110		0.0206		0.0206	
SOx	0.0060		0.0060		4.35E-06		4.35E-06	
VOC	0.0220		0.0220		0.0008		0.0008	
CO	0.4390		0.4390		0.0029		0.0029	
1,3-Butadiene	-	-	-	-	1.69E-06		1.69E-06	
Acetaldehyde	-	-	-	-	7.10E-06		7.10E-06	
Acrolein	-	-	-	-	6.70E-06		6.70E-06	
Benzene	-	-	-	-	4.02E-06		4.02E-06	
Butyr/isobutyraldehyde	-	-	-	-	1.24E-07		1.24E-07	
Carbon Tetrachloride	-	-	-	-	4.51E-08		4.51E-08	
Chlorobenzene	-	-	-	-	3.28E-08		3.28E-08	
Chloroform	-	-	-	-	3.49E-08		3.49E-08	
1,1-Dichloroethane	-	-	-	-	2.88E-08		2.88E-08	
1,2-Dichloroethane	-	-	-	-	2.88E-08		2.88E-08	
1,2-Dichloropropane	-	-	-	-	3.31E-09		3.31E-09	
1,3-Dichloropropene	-	-	-	-	3.23E-08		3.23E-08	
Ethane	-	-	-	-	1.79E-04		1.79E-04	
Ethylbenzene	-	-	-	-	6.31E-08		6.31E-08	
Ethylene Dibromide	-	-	-	-	5.42E-08		5.42E-08	
Formaldehyde	-	-	-	-	5.22E-05		5.22E-05	
Methane	-	-	-	-	5.86E-04		5.86E-04	
Methanol	-	-	-	-	7.79E-06		7.79E-06	
Methylene Chloride	-	-	-	-	1.05E-07		1.05E-07	
Naphthalene	-	-	-	-	2.47E-07		2.47E-07	
Styrene	-	-	-	-	3.03E-08		3.03E-08	
1,1,2,2-Tetrachloroethane	-	-	-	-	6.44E-08		6.44E-08	
1,1,2-Trichloroethane	-	-	-	-	3.90E-08		3.90E-08	
Toluene	-	-	-	-	1.42E-06		1.42E-06	
Vinyl Chloride	-	-	-	-	1.83E-08		1.83E-08	
Xylene	-	-	-	-	4.96E-07		4.96E-07	

FORM 4: SUMMARY & CERTIFICATION YEAR 2013

All the emissions for each pollutant are totalled and entered in the table below.

Pollutant	Tonnage (tons per year)
Particulate Matter (PM)	
Particulate Matter Less Than 10 Microns (PM10)	
Nitrogen Oxides (NOx)	
Sulfur Oxides (SOx)	
Volate Organic Compounds (VOC)	
Carbon Monoxide (CO)	
Hazard Air Pollutants (HAPs)	

Certification of Truth & Accuracy
I certify that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
All information not identified by me as confidential in nature shall be treated by the Arizona Department of Environmental Quality as public record.

Signature of Responsible Official: _____ Date: _____

Print Name: _____

Title: _____